THE REVIEW

DEVOTED TO THE INTERESTS OF THE AMERICAN SOCIETY FOR STEEL TREATING

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CLEVELAND SPEAKER COVERS STAINLESS

O. V. Greene Clearly Explains Metallography on Jan. 4

By H. B. Pulsifer

Monday evening, Jan. 4, the Cleveland chapter gathered in the Rookwood ball room of Hotel Olmstead for dinner and the metallographic session of the current season.

The 60 members present at the dinner listened to a thrilling coffee talk by Major John J. Berry, who is manager of the Cleveland Airport. He recounted the history of commercial flying in this country and vividly explained the present development of domestic and foreign air travel.

This was followed by an exhibition of the Rogers and Van Wert film showing the transformations in iron and the melting of alloys.

Chairman Benninghoff then introduced O. V. Greene of the Carpenter Steel Co., who gave the address of the evening on the "Metallography of Stainless Steel."

The subject was skillfully developed with diagrams and slides of photomicrographs to connect the theoretical and practical aspects. Compositions, physical properties and chemical resistance were explained and correlated with the microscopic structures. The cold treatment that is being used by the Carpenter company to complete transformations climaxed the formal discourse.

Many questions were then asked about particular features of the stainless steels. Mr. Greene's intimate contact with the extensive research work of his company on stainless alloys provided a comprehensive lecture and a ready answer for most of the questions.

H. J. FRENCH'S TALK PLEASES JERSEYMEN

115 Brave Blizzard to Study Effect of Heat on Steel

By J. Sammon

One of the very few bad nights of this winter occurred on the Feb. 2 meeting night of the New Jersey chapter, which kept the attendance down to 115, but those who did brave the snow and rain were well rewarded, as the exhibit, moving picture and the speaker, H. J. French, metallurgist of International Nickel Company, gave every one a thoroughly enjoyable and instructive program.

The Driver-Harris Co., Harrison, N. J., had an interesting exhibit of nickel-chromium alloys.

The title of the picture was "Manufacture of Electrical Instruments," and was presented through the courtesy of the Weston Electrical Instrument Co., Newark, N. J. This picture shows the principle on which electrical measuring devices work, and also shows in detail, the accuracy and precision required in the manufacture of these instruments.

As Chairman Wyzalek was out of town on a business trip, Vice-Chairman A. M. McWilliams presided.

The title of Mr. French's talk was "The Effects of Temperature on the Properties of Steels." It is at once apparent from the title of his talk, that it required a great deal of research work, plus time and patience, and as he unfolds his talk, one is amazed at the great amount of data Mr. French has collected.

He illustrated his talk with slides, showing charts, castings and rolled stock with and without additions of nickel, opening his talk with a brief description of the higher nickel-chromium alloys, which are recommended for use at temperatures up to 1800° F.

Mr. French showed charts of plain steels of several analyses, that were heated in stages up to 1000° F. with varying loads, both constant and intermittent, showing the percentage of creep, after which he showed charts of the same steels, except with varying percentages of nickel additions up to 5%, under the same conditions. He also showed pictures of castings of various designs, some of which contained nickel only to increase the wear-resisting properties, and others for heat applications, that contained both nickel and chromium.

TALK ON MAGNESIUM BY DR. GANN INTERESTS WASHINGTON

Feb. 19 Meeting Instructive

By W. R. Angell

The subject of "Magnesium and its Alloys" was presented to the Washington Chapter at its meeting held Feb. 19, by Dr. John A. Gann, chief metallurgist of the Dow Chemical Co.

At the informal dinner preceding the meeting, 26 members and guests assembled to greet the speaker. The chapter was also fortunate in having as its guest National Vice-President W. B. Coleman of Philadelphia.

The meeting was then turned over to Vice-Chairman Lewis H. Fawcett, who introduced the speaker and acted as technical chairman.

Dr. Gann then proceeded with his story of magnesium. The present method of recovering magnesium is by the electrolysis of anhydrous magnesium chloride; the first problem of which is to get rid of the water of crystallization. A purity of 99.93% magnesium can be obtained.

Magnesium can be alloyed with copper, zinc, aluminum, etc., but the most important alloys at the present time are the magnesium-aluminum series. They can be very easily welded and machined and, according to Dr. Gann, they are not subject to intergranular corrosion.

"SPAN SUPREME" IS PHILADELPHIA TOPIC

Movies and Lecture Describe New Hudson River Bridge

By Adolph O. Schaefer

Fate and a smart program committee presented the Philadelphia chapter with an extraordinary double-header for its meeting on Jan. 29. W. H. Eisenman, national secretary, paid this City of Brotherly Love one of his all too infrequent visits. The scheduled event on the program was the first showing in this district of the film, "The Span Supreme," a vivid story of the design and construction of the George Washington Bridge.

The weather bureau, not to be outdone, contributed a wild and windy rainstorm; while the chapter responded to a man and furnished the record turnout of the season.

Even the dinner preceding the meeting added to the records broken by having a record attendance. What is more to the Secretary's liking is the fact that the highest percentage ever noted of those present had sent in their reservation cards.

Our genial friend Bill Eisenman found that his many friends in Philadelphia had not forgotten him. The dinner was a personal ovation to him. The rest of the chapter came early and crowded the seats around the sides of the room. Bill's message of optimism was sufficient reward for braving the wind and the weather. After dinner there was much hand shaking.

Captain Charles M. Jones, assistant chief engineer of the bridge department of John A. Roebling's Sons Co., brought the movie, "The Span Supreme," to us. It is impossible in one short article to find enough glowing words to do justice to it. We now have the proper respect for the magnitude of the undertaking of spanning the Hudson.

The pictures start, as all such pictures should, with the open hearth furnace and the manufacture of the strands that make up the cables. We witnessed the breaking down of the ingots, rolling to bars, etc., of the strands. Then the scene shifted to the Hudson River.

Diagrams explained the names of the parts and made clear the features of the construction. The pictures of the bridge itself were marvelous and inspiring. The innovations in bridge building necessary to the construction of so large a bridge were well covered. The organization and planning necessary for such a large construction were most impressive.

Captain Jones' talk explained all of the doubtful points and answered all of the questions. He added immeasurably to the enjoyment of the picture. The Philadelphia chapter can recommend this picture as a real treat.

The Auditorium was packed, standing room only was available; and the Membership Committee, swamped to death lost the count after three hundred had registered.

H. J. FRENCH 1933 CAMPBELL LECTURER

E. C. Bain Will Present 1932 Paper as Announced Before

H. J. French has accepted the invitation of the Board of Directors of the A. S. S. T. to deliver the Campbell Memorial Lecture at the annual meeting of the American Society for Steel Treating at its convention in 1933. Mr. French has charge of alloy steel and iron development at the International Nickel Company, 67 Wall St., New York City.

H. J. French

The 1932 lecture will be presented by Edgar C. Bain, metallurgist, U. S. Steel Corporation Research Laboratories, Kearny, N. J., as announced last fall. Mr. Bain's paper, the subject of which is not yet announced, will be given in Buffalo, October 5.

The Board of Directors has adopted the policy of selecting Campbell lecturers considerably in advance to allow as much time as possible for investigation and preparation of material which will serve for the lectures. Mr. Bain will be seventh Campbell Lecturer and Mr. French the eighth.

E. C. Bain

The first was delivered in 1926 by Wilhelm M. Guertler, associated with the Metall - Institut der Technischen Hochschule in Berlin. Succeeding lectures and their topics have been:

1927—"Contribution to the Theory of Hardening and the Constitution of Steel," by Dr. Zay Jeffries, consultant, Aluminum Co. of American and General Electric Co.

1928—"Application of Science to the Steel Industry," by Dr. W. H. Hatfield, Brown-Firth Research Labs., Sheffield, England.

1929—"Steel at Elevated Temperatures," by Dr. Albert Sauveur, Gordon McKay Professor of Metallurgy and Metallography, Harvard University, Cambridge.

1930—"Oxygen in Steel," by Dr. M. A. Grossmann, Research Engineer, Illinois Steel Corporation, Chicago.

1931 — "Nonmetallic Inclusions in Steel," by Dr. Charles H. Herty, Jr., Director of Research, Mining and Metallurgical Advisory Boards, Carnegie Institute of Technology, Pittsburgh.

TALK ON FORGING PLEASES DETROIT

A. M. Steever Describes How to Produce Good Forgings

By O. W. McMullan

The February meeting of the Detroit chapter was held in the Hotel Fort Shelby on Feb. 8. The dinner was followed by a talk by Edmund Blasko on "Conditions in Soviet Russia." Mr. Blasko has just returned from 18 months service in putting the heat treat shops into operation at Stalingrad and gave us interesting first hand information about conditions there.

A. M. Steever, chief metallurgical engineer of the Great Lakes Forging Co., Chicago, was the technical speaker on "Forgings and Forging Failures."

Hammers are of two kinds, board and steam according to the operating mechanism. Steam hammers have a capacity up to 25,000 pounds and board hammers up to about 7,000 or 8,000 pounds, the rating being on the weight of the ram. Board or gravity hammers give a blow determined by weight and height of fall while steam hammers have velocity in addition to these factors. Presses and upsetters are also used for hot working.

Die blocks must withstand abrasion, warping and fire cracks. The majority are heat treated to a 5 point range within 45-58 scleroscope. Alloy blocks last longer than plain carbon. A good

(Continued on Page Four)

HOT WORKING SUB-COMMITTEE MEETS IN NEW YORK FEB. 16

Arranges Practice for Handbook

The Sub-Committee of the A.S.S.T. Recommended Practice Committee, of which S. C. Spalding is Chairman, and J. P. Fleming, A. O. Schaefer, and W. R. Shimer are members, has been very actively engaged in the preparation of a practice covering the general principles in the hot mechanical working of steel.

On Feb. 16, during the annual convention of the A.I.M.E., this Sub-Committee held a meeting at the Engineers' headquarters in New York. At this meeting the Committee carefully considered all suggestions and comments that had previously been received on the preliminary draft of the proposed practice covering the hot mechanical working of steel.

The Committee has arranged the practice in final form which will be ready for consideration of the Recommended Practice Committee within the next few weeks.

The practice on Hot Mechanical Working of Steel will undoubtedly be of much interest to many members of the Society and add greatly to the value and usefulness of Metals Handbook.

The recommended practices are also being prepared.

GAS ATMOSPHERES ARE YORK'S TOPIC

R. G. Guthrie Covers Control of Furnace Reactions

By Arthur W. F. Green

The York chapter had the pleasure of hearing Robert G. Guthrie, consulting metallurgist, Peoples Gas, Light & Coke Co., Chicago, and past president of the National Society, at their Feb. 10 meeting, held in the Engineering Society's Rooms in York.

Mr. Guthrie was introduced to the meeting by Arthur Green, chairman of the entertainment committee. He spoke on "Control of Furnace Atmospheres." To explain the relationships that exist between the several component parts of gas when burned, he touched upon some recent developments in the carburizing field, including the use of the "surge method" and particularly detailed the effects of hydrogen and oxygen in control of reactions for carburizing work. Mr. Guthrie stated that oxygen is unjustly blamed for many adverse reactions. He pointed out specifically the effects of control of water in the gas and its subsequent dissociation in a furnace, either for carburizing or general practice control.

His talk was amply illustrated by very splendidly selected lantern slides showing the results of controlled conditions on the steels subjected to different gas analyses for carburizing work, in this way giving considerable weight to his general topic on control of furnace conditions.

The discussion which followed Mr. Guthrie's talk was entered into with a great deal of frankness.

Afterward it was the privilege of the chapter to introduce W. B. Coleman, vice-president of the National Society. Bill gave a short talk in which he discussed some of the phases and considerations which were the most interesting developed in the February meeting of the National Board of Directors. He told the chapter about the coming Convention and Exposition which will be held at Buffalo in the fall. He complimented the chapter on the fact that our average attendance at the meetings during the year 1931-32 to date has been about fifty and there were over sixty present for the meeting which he attended.

The next meeting of the York chapter will be held in York on March 25 and will be addressed by G. A. Richardson of Bethlehem Steel Company, on the subject of "Structural Steels and Their Uses," which talk will be illustrated with motion pictures. We cordially invite any visitors to be present with us for this meeting.

S. R. THURSTON DIED FEB. 7

S. R. Thurston, charter member of the Golden Gate chapter died on February 7.

ALMOST 50% OF 1932 SHOW SPACE TAKEN

Buffalo Congress, Exposition Wins Immediate Popularity

Instant approval from industry has been won by the fourteenth annual National Metal Congress and Exposition scheduled for Buffalo, the week of October 3. Although six months away, the Exposition is already almost half sold, and plans for the technical programs of the Congress are likewise maturing.

The Societies which will participate with the American Society for Steel Treating in the Congress are the American Welding Society; Institute of Metals and Iron and Steel Divisions, American Institute of Mining and Metallurgical Engineers; Iron and Steel Division, American Society of Mechanical Engineers; Production Activity Division, Society of Automotive Engineers; and the Wire Association.

As announced in the last issue, the Exposition will be held in the 174th Regimental Armory, only ten minutes from the Hotel Statler, headquarters of the Congress. Fifty thousand square feet of exhibit space, free from pillars or other obstructions, has been laid out on the floor plan.

Preparations for the A. S. S. T. technical programs are advancing under the guidance of the Publication Committee and Ray T. Bayless, assistant secretary of the Society in charge of technical activities.

It is planned to reduce materially the number of papers in each session to provide more time for valuable discussion. Morning sessions will be held in the Statler; afternoon meetings will be at the Armory.

DESCRIBES UNIQUE CONNECTING RODS

Canton-Massillon Men Hear L. A. Danse on Jan. 29

By N. L. Deuble

An interesting meeting of the Canton-Massillon chapter was held, January 29. L. A. Danse, chief metallurgist of Cadillac Motor Car Co., spoke on "An Unique Automobile Connecting Rod."

His talk covered the manufacture of the Cadillac connecting rod from the start, through the forge shop and heat treating department to the finished part. This was illustrated by motion pictures which were taken by Mr. Danse at the Timken Steel & Tube Co., Canton Drop Forge & Mfg. Co. and the Cadillac Motor Car Co.

Mr. Danse carefully outlined the procedure which they followed in developing this rod. Due to the large number of failures which they had, he examined the steel closely and purchased their material on a microscopic basis, as well as chemical analysis. The first rods were made from GMC-1050. This move did not eliminate their trouble and they then adopted GMC-4140-A purchased on the same basis. However, they still had some difficulty and they then started etching and found there was a relation between the flow lines in points of failure. Mr. Danse then put this up to the forging company and the Canton Drop Forge & Mfg. Company developed a rod which proved satisfactory and which is now being used.

Instead of breaking down the stock in the usual manner, it is broken down on Ajax rolls, these rolls being designed for exact distribution of the material. After the break-down operation on the Ajax rolls, the material is edged on the forging hammer and then finished. This rod is held within very close tolerances as to weight and section. There is no machining on the channel part at Cadillac Motor Car Co. After the rods are inspected, they are then shipped to Cadillac and put through a special heat treating furnace for this purpose. They are quenched into oil from approximately 1500° F. and then drawn. The hardness is held to 277/311 Brinell.

No connecting rods which are very crooked are straightened. Mr. Danse feels that the rods which are badly bent and straightened again bend in the motor after they have been in service for some time and cause trouble.

THE REVIEW

Devoted to the interests of the American Society for Steel Treating

A Review of the Activities of the Chapters and National Organization of the A. S. S. T.

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A. H. D'ARCAMBAL, *President*
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RAY T. BAYLESS ..... *Editor*
JOHN G. MAPES ..... *Managing Editor*

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AUDITORS' REPORT OF SOCIETY BOOKS

Given below is balance sheet and operating statement as presented by Ernst and Ernst after an audit of the Society books as of December 31, 1931.

BALANCE SHEET
AMERICAN SOCIETY FOR STEEL TREATING—CLEVELAND
As of the close of business December 31, 1931

ASSETS

CASH			
ON HAND			
Petty cash fund		$ 55.00	
ON DEPOSIT			
Savings accounts	$18,207.95		
Commercial account	2,349.41	20,557.36	$ 20,612.36
SECURITIES			
U. S. Government treasury bonds	$30,391.89		
Other bonds	99,502.73	$129,894.62	
Accrued interest		1,574.33	131,468.95
ACCOUNTS RECEIVABLE			
Advertising	$15,191.75		
Convention—1931	3,144.04		
Miscellaneous	1,814.76	$ 20,150.55	
Less: Allowance for doubtful		3,114.81	17,035.74
INVENTORY (certified by management)			
Bound and unbound publications, books, paper stock, etc.			16,718.74
OTHER ASSETS			
Traveling advances, employees' accounts, postal deposits, etc.			4,085.47
PERMANENT (book value)			
Office furniture, fixtures and equipment			4,554.50
DEFERRED			
Prepaid 1932 convention expense		$ 601.40	
Unexpired insurance premiums		264.01	865.41
			$195,341.17

LIABILITIES

ACCOUNTS PAYABLE		
For purchases, expenses, etc.	$ 615.21	
For apportionment of dues to chapters	389.88	
Credit balances—advertisers, exhibitors, etc.	361.08	$ 1,366.17
RESERVES		
For conventions	$ 20,000.00	
For contingencies	20,000.00	
For H. M. Howe medal fund	5,000.00	
For general index	200.00	45,200.00
DEFERRED INCOME		
Publications	$ 648.07	
Convention—1932	87.50	735.57
SURPLUS		148,039.43
		$195,341.17

ROCHESTER MEETS JOINTLY

Cooperates in February in Sessions on Steels for Resisting Corrosion

By J. M. Keating

The February meeting of the Rochester chapter was held at the Chamber of Commerce in joint session with the Superintendent and Production Managers' Group of the Industrial Management Council.

The speaker of the evening was Henry DeFries, chief metallurgical engineer of the Associated Alloy Steel Co., who gave as his message "The Latest Developments in Corrosion Resistant Steels." His topic covered a range of alloy steels that have been studied under conditions of high temperature and pressure service.

An open discussion followed in which Mr. DeFries answered questions on corrosion resistant steels.

About 100 members and guests attended.

NEW PORTABLE PYROMETER

A new, electrically driven portable recording pyrometer is announced by the Hoskins Manufacturing Co., Detroit. Being portable to the job is claimed to be a valuable advantage. The weight is 17 pounds. The instrument furthermore permits of simple wall-mounting, from which position it can be removed merely by lifting it off. The chart is driven by a self-starting synchronous electric clock movement.

The chart is of the circular type and provides a 24 hour temperature record. The meter is equipped with automatic cold-end compensation and is calibrated for Chromel-Alumel thermo-couples.

TRI-CITY MEN STUDY X-RAY AT GOOD MEETING ON FEB. 2

W. G. Praed Interests as Speaker

Wm. G. Praed, industrial X-Ray specialist with the Claude S. Gordon Co., Chicago, spoke on "X-Ray As Used in Industry" before about 50 members of the Tri-City chapter at the Davenport Chamber of Commerce on Feb. 2.

Mr. Praed, with the aid of slides, effectively showed the value of X-Ray in modern industrial practices. The fact that to date X-Ray is used largely as laboratory equipment and not in production work has in no way minimized its importance to those interested in the metal industry. Pieces that seem perfect to the eye or to the microscope may show entirely different conditions under the X-Ray. Mr. Praed brought this out very clearly in the case of welding practices. Intricate and important welds by leading welders showed faulty bondage or mushy structure in the X-Ray photos.

Mr. Praed illustrated by photos how these faults in welding and other practices are shown to the producer. The producer is then in a better position to tackle his problem and overcome the difficulties.

X-Ray clearly exposes faults in metals that are almost impossible to find by other means.

NATIONAL TUBE OFFERS BOOKLET

National Tube Co., Frick Bldg., Pittsburgh, has issued a 40-page booklet describing U S S stainless and heat resisting pipe and tubes.

LISTS METALS IN AIRCRAFT ENGINE

New York Members Hear H. J. Fischbeck on Jan. 18

By F. H. Clark

The January meeting of the New York chapter was held on the 18th with dinner served at Loft's Restaurant and the meeting held afterwards in the Woolworth Building.

H. J. Fischbeck, chief metallurgist of the Pratt and Whitney Aircraft Co., gave a talk on "Metallurgy in Aircraft Motor Construction." In 1880, according to Mr. Fischbeck, the internal combustion engine weighed 500 lbs. per horsepower. In 1903, the Wright brothers could find no engine powerful enough which was also light enough for their first airplane. They finally used a 4 cylinder engine which could develop 30 horsepower. The crank shaft of this engine was machined from bar stock.

Today the "Wasp" engine manufactured by Pratt and Whitney weighs 700 lbs. and develops 420 horsepower or less than 2 lbs. per horsepower. The present type consists of radially placed cylinders to give uniform cooling, maximum horsepower and low fuel and gas consumption. Air cooling of the cylinders is the most satisfactory as it saves weight. This method of cooling depends on the use of light alloys in thick walled sections having high heat conductivity.

Mr. Fischbeck outlined some of the alloys used in the various engine parts. The crank case and nose are forgings of aluminum alloy 51 ST. Many small steel parts are made of S.A.E. 6150; the cylinder head is a copper-aluminum alloy S.A.E. 34; valve seats of forged aluminum bronze and inlet valve of high speed steel. Springs are of chrome-vanadium steel; push rod of duralumin and the master rod is of S.A.E. 3140 steel.

Some difficulty was found in machining pistons of 12% aluminum-silicon alloy until tungsten carbide tools were used. The piston rings are the only cast iron parts utilized in the engine. These are cast individually. The crank shaft is made of 5% nickel steel heat treated to 364 Brinell and 140,000 lbs. elastic limit. The supercharger consists of a magnesium alloy; the supercharger gear a 5% nickel steel carburized.

The present development at the Pratt and Whitney Aircraft Co. is towards a smoother engine and lower gas and oil consumption. A study is being made of the outside diameter of the motor versus the speed as the radially placed cylinders are an important factor in reducing the speed. The different types of engines manufactured by the Pratt and Whitney Co. vary only in power. These are the Wasp Jr., Wasp, Hornet A and Hornet B.

CINCINNATI MEN INVESTIGATE CORROSION RESISTANT STEELS

Feb. 10 Speaker is John S. Ewing

By N. C. Strohmenger

John S. Ewing, metallurgical engineer, Crucible Steel Co. of America, spoke before the Feb. 10 meeting of Cincinnati chapter held at the Hotel Gibson. His subject was "Corrosion and Heat Resisting Steels."

This talk was accompanied by slides that showed the numerous combinations of alloy steels that can be used to resist corrosion and heat. Some of these steels can be heat treated and it was explained how this affects their physical properties. A lot has been learned over the past few years on the ability to weld these special steels and at the present time all of them can be welded with an acetylene torch or an electric welding machine.

When one saw some of the different applications of these steels that have answered the corrosion or heat resisting conditions remarkably better than previous material used, one felt as though there was an enormous field for these steels, now in their infancy.

Mr. Ewing conveyed his subject in a very interesting and clear way and we could not help getting a lot of good out of his subject. Then adding to this talk the lengthy general discussion that followed, there was an unusual amount of benefit derived from this meeting.

HADFIELD WRITES ABOUT FARADAY

Sir Robert Hadfield, honorary member of the A. S. S. T., has published a remarkable book, "Faraday and His Metallurgical Researches". This book, containing 329 pages and 70 illustrations, may be obtained from the publishers, Chapman and Hall, Ltd., 11 Henrietta St., W. C. 2, London, for 21 shillings. This book was reviewed in *Metal Progress*, November, 1931, page 87.

INCOME AND EXPENSE

AMERICAN SOCIETY FOR STEEL TREATING—CLEVELAND
For the year ended December 31, 1931

INCOME			
Metal Progress		$ 93,602.59	
1931 Convention		56,518.21	
Membership			
Membership dues	$63,824.42		
Sustaining exhibitors' dues	3,425.00	$67,249.42	
Less: Apportionment of dues to chapters		27,477.44	39,771.98
Western Metal Show			25,425.92
Extension division			7,385.00
Interest earned			6,840.98
Books published and purchased for resale			5,436.66
Reprints			4,419.58
"Transactions"—bound copies, subscriptions, etc.			3,700.21
Profit on sale of securities			2,420.80
Discount earned			960.73
Bindery			523.50
"The Review"—advertising and subscriptions			279.20
Miscellaneous			599.41
TOTAL INCOME			$247,884.77
EXPENSE			
"Metal Progress"		$88,518.31	
1931 Convention		47,273.22	
Western Metal Show		23,843.84	
Extension Division		7,940.66	
Books published and purchased for resale		5,853.01	
Reprints		2,783.52	
"Transactions" — bound copies, subscriptions, etc.		15,701.67	
Bindery		78.35	
"The Review"		3,289.04	
General expense		17,509.98	
Secretary's office		16,361.66	
Accounting Department		6,251.09	
Recommended Practice		3,504.62	
Directors' expense		1,313.77	
President's office		558.69	$240,781.43
Support of chapters			910.19
E. D. Campbell memorial lecture expense			500.00
National committees			472.75
H. M. Howe medal fund expense			83.32
Books purchased for library			64.18
Pencils, pins, etc.			19.80
TOTAL EXPENSE			242,831.67
EXCESS INCOME			$ 5,053.10

FILMS, X-RAY TALK PLEASE CHICAGOANS

W. G. Praed is Speaker; Steel and Pipe Lines in Movies

By E. C. Block, Jr.

The Feb. 11 Chicago chapter meeting was attended by 175 members and guests.

During the dinner a very appropriate musical program was furnished. Directly after dinner the meeting was called to order by Chairman D. L. Colwell, who introduced C. E. Plummer as the technical chairman.

Mr. Plummer read a telegram from Professor F. N. Menefee of the University of Michigan, in which he expressed his regret at not being able to give his lecture on the subject of "Recent Developments in the Testing of Metals" because of unforeseen personal business which had arisen.

A very interesting and educational movie was then shown. This movie showed all the steps in the manufacturing of the Illinois Steel Co.'s alloy steel.

Following this alloy steel film, another interesting movie with a "Bill Hayes" talkie connection was presented. This movie is called the "Blue Flame" and was loaned to our chapter by the Peoples Gas, Light and Coke Co. This unusual movie showed the 1000-mile pipe line from Texas to Chicago. It illustrated the laying of the 220,000 tons of steel pipe through farms, swamps, at the bottom and under rivers. It also explained the mixing of the natural gas with the producer's gas to give a fuel of greater B.T.U. value at less cost. We suggest that the other chapters take advantage of the possibility of obtaining this film.

After these two excellent pictures, the technical chairman introduced the speaker of the evening, W. G. Praed of the Claude S. Gordon Co. Mr. Praed has had very many interesting experiences with the use of X-ray in the inspection of material and gave a most highly beneficial lecture. He discussed the steadily increasing demand for the X-ray; a demand stimulated by manufacturers who have found that the chemical analysis and microscope could not tell them enough about their metals to indicate the causes for failures.

Slides were shown illustrating radiographs of defects produced by improper forging, rolling, welding and heat treating. Mr. Praed was kept busy answering questions which ranged from elementary radiography to the actual correction of the defects shown.

Mr. Plummer then thanked Mr. Praed for his interesting and educational talk.

COLUMBUS ENJOYS TALK ON DRAWING

Joseph Winlock on Platform Before Chapter on Jan. 5

By L. H. Marshall

The January meeting of the Columbus chapter was held Jan. 5 at the Engineering Experiment Station, Ohio State University. The Experiment Station was open for visitation by members and friends and many took advantage of this opportunity to become acquainted.

Joseph Winlock of the E. G. Budd Manufacturing Co., Philadelphia, was the speaker of the evening. His topic was "Stamping, Drawing and Forming." He showed that such mild treatments as heating in boiling water sometimes produced a very marked difference in the results secured from a given lot of steel sheets. Modern production calls for most severe working of the metal in stamping and forming operations. At the same time protection of surface finish is demanded. Added to this is the fact that the metal being formed is very unevenly strained. In some portions of the stamping the deformation may be slight while at other points the metal may be strained to the limit. These separate portions of the stamping will then react quite differently to the same heat treatment. All of these factors must be carefully watched in shop production.

Sheet steel exhibits different properties in different directions in the sheet. Accordingly it has been found that the maximum deformation should take place in the direction of the rolling of the sheet. Stead's brittleness is most marked at an angle of 45° to the direction of rolling and is a factor to be guarded against. Grain growth due to critical straining of the metal is also a source of considerable trouble.

Mr. Winlock's talk was illustrated with moving pictures as well as lantern slides. The films gave a vivid presentation of modern production methods in making automobile bodies. They showed stamping and forming operations on a very large scale. Some interesting views were also shown illustrating the remarkable stamina of the modern, all-steel automobile body.

The subject of stamping and forming, as ably presented by Mr. Winlock, proved of great interest to his audience as shown by the active discussion that followed his talk.

P. A. E. Armstrong, consulting metallurgist and member of the Society, has announced the removal of his offices to 1712 Ambassador Ave., Beverly Hills, Calif.

NEW JERSEY ENJOYS TALK ON NITRIDING

Dr. V. O. Homerberg is Speaker at Meeting on January 5

By J. Sammon

The New Jersey chapter members and friends began the New Year in earnest with an attendance of 203 on Jan. 5, in Newark, N. J.

The Monroe Calculating Machine Co., Inc., Orange, N. J., had on exhibit a number of their latest model calculating machines. H. W. Ryan, an executive of this company, in a talk on business conditions, stated that during 1931 his company had one of its best years, due to their developing new models and a vigorous sales campaign.

The movie was entitled "Industrial Heating and Ventilation" and was presented through the courtesy of The Carrier Engineering Corp., Newark, N. J., whose slogan is "Manufactured Weather." This film is very interesting, as it shows the methods employed to heat and cool large buildings in both summer and winter.

Dr. Victor O. Homerberg, technical director of the Nitralloy Corp., was the speaker of the evening. His subject was "Nitriding."

Dr. Homerberg covered this subject from beginning to end, starting his talk on the types of furnaces in general use for this work, experiences with containers made of various alloys, results obtained with the various analyses of steels suitable for nitriding, all of which were illustrated with slides.

In the course of his talk, Dr. Homerberg gave many practical suggestions, such as explaining why it is necessary to remove the decarburized case from a forging before attempting to nitride. If after the steel is nitrided, its resistance to corrosion is to be employed, it should be used as it comes from the container.

But if it is to be used for its wear-resisting qualities, about 0.001 in. should be ground off the surface, as this outer shell or white layer, as Dr. Homerberg calls it, is highly resistant to corrosion, but is a detriment to its wearing qualities. He also suggested that companies with no facilities to anneal the steel before nitriding, should buy heat-treated steel to insure the best results.

BOSTON HEARS TALK ABOUT USES OF GAS

E. D. Milener is Speaker at Meeting on January 8

By H. E. Handy

The January meeting of the Boston chapter was held at Massachusetts Institute of Technology on Jan. 8, the attendance being about 125. The guest speaker of the evening was Eugene D. Milener, industrial research representative of the American Gas Association, New York, who discussed "The Application of Gas to Heat Treating."

Mr. Milener described in detail the use of gas in industry for the general heating of metals and then discussed at some length the problems which are being subjected to extensive research by the American Gas Association laboratories. He spoke in particular about the surface decarburization of steel at heat treating temperatures and showed slides depicting the action of the various furnace gases on the surface of the metal.

He also described the influence of atmosphere and temperature on the behavior of steel in forging furnaces and stated that in many cases it had been conclusively demonstrated that the absence of scale and decarburization alone, on certain forgings, had, due to savings on subsequent operations, resulted in a reduced total cost of the product, notwithstanding the fact that the city gas used as a fuel in the forging furnaces was more expensive than oil or coal.

Prior to the technical session a family-style dinner was served in Walker Memorial to about seventy-five members of the chapter. The dinner guest was Prof. Robert E. Rogers of Massachusetts Institute of Technology. Professor Rogers, who, some time ago, created considerable of a sensation when he advised his students to be snobs and to marry the boss's daughter rather than his stenographer; and who recently suggested that college girls were sloppy dressers, spoke very eloquently on the subject of character building, designating it as "Man Treating." The opportunity to make personal contact with Prof. Rogers was very much enjoyed by those members who attended the dinner.

SOUTHERN TIER MEN ENJOY PHILLIPS ON "MOLYBDENUM"

Meeting Held on Feb. 15

By W. S. Bennett

The regular meeting of the Southern Tier chapter was held Feb. 15 at the Jenkins Inn, Waverly, N. Y.

The principal speaker was W. H. Phillips, vice-president of the Molybdenum Corp. of America, who spoke on the use of "Molybdenum in Steel and Cast Iron." In prefacing his talk on the effects of molybdenum, Mr. Phillips showed that its effects were recognized at a very early date. In fact the Germans were known to have used ores containing molybdenum in the making of their cannon many years ago, although it was necessary to import this ore from Japan.

The speaker stated that molybdenum was the most potent alloying element which could be used with steel, as even the effects produced with tungsten could be had by its use. Practically all of the important physical properties of steel were found to have been improved by the use of molybdenum, including tensile strength, wear resistance, and strength and corrosion resistance at elevated temperatures.

Molybdenum-bearing iron and steel are coming into general use in brake drums for automobiles, valves and valve seats for handling high temperature products and many other applications.

BUFFALO STUDIES MACHINE FORGING

J. H. Friedman Tells Process to 72 Members on Jan. 14

By Clyde Llewelyn

The fifth regular meeting of the Buffalo chapter, for the 1931-1932 season, was held at the Buffalo Hotel on Jan. 14. Dinner was served to 22 members and guests and there were 72 present at the regular meeting which followed.

The meeting was called to order at 8:30 P. M., by Chairman J. H. Birdsong, and, after making a few remarks and announcements of general interest to the chapter, he introduced the speaker of the evening, who was J. H. Friedman, vice-president of National Machinery Co., Tiffin, Ohio. His subject was "Machine Forging." Mr. Friedman's very interesting talk was accompanied by motion pictures which clearly portrayed the procedure followed in the manufacture of machine forgings, and, during their showing, the speaker outlined the processing of various types of forgings and fully explained the manner in which the machines function. He also discussed the subject of die failures at some length, attributing these to three causes, the greatest of which is heat; the next is abrasion and stated the least is pressure.

He further recommended certain ways for prolonging die life by means of proper composition, preparation and heat treatment. As to means of cooling, it was stated that most plants use water on the outside of dies; at others, where conditions make it necessary, they are operated dry, while at still others, the dies are internally cooled. The speaker stated that the average scrap loss in machine forgings, including crop ends, slugs, flash and scale, amounts to only about 8 to 15 per cent, which is quite low. A large part of such forgings are tubular in form, which is accomplished by means of a piercing operation and results in very little loss of metal.

At the conclusion of the talk, the meeting was thrown open for discussion and a very great amount of interest was shown, as evidenced by numerous questions being asked of the speaker, all of which he answered satisfactorily. Just prior to adjournment, Mr. Friedman was given a rising vote of thanks.

HOLDS ANNUAL SAFETY SHOW

Over 2500 employees and members of their families attended the second annual R & H Safety Show, held by the Niagara plant of Roessler & Hasslacher Chemical Co., in Niagara Falls, N. Y., on Feb. 9, 10 and 11. This show included feature acts and demonstrations by R & H employees, addresses on safety by plant executives, and the presentation of awards to departments with meritorious safety records.

In January the R & H Niagara plant won the du Pont General Manager's prize for operating over a period of approximately 264 days without a lost-time accident. At the time of the show, the period worked without a lost-time accident was 285 days, representing over 2,000,000 man-hours.

DAYTON MEN ENJOY LAST TWO MEETINGS

December Smoker and Talk by Winlock in January Please

By Richard R. Kennedy

The December meeting of the Dayton chapter took the form of a smoker for members and guests. Short talks were given by G. R. Long of the Frigidaire Corp. on "Wear Resistance," by H. H. Walther of the Dayton Steel Foundry Co. on "Alloy Cast Iron," by G. J. Oswald of the National Cash Register Co. on "Deformation of High Speed Steel in Heat Treatment" and by R. R. Kennedy of Wright Field on "Nitriding."

One of the features of the meeting was a guessing contest in which various steels were "sparked" on a grinding wheel and the members guessed the type of steel from the spark. The winners of the contest, Harry Turner of the Ohio Heat Treating Co. and Harry Sedam of Wright Field, were presented with text books on metallurgy.

Lunch was served through the courtsy of the Dayton Power and Light Co., and as a concluding feature of the meeting, various complicated steel parts were passed around and the members discussed the best heat treatment which could be used to develope the required physical properties in the parts.

The January meeting of the Dayton chapter was held at the Engineer's Club on Jan. 4. W. H. Pfeiffer of the Frigidaire Corp. delivered an interesting talk on "Porcelain Enamel" in which he discussed some of the problems encountered in enameling steel. In connection with Mr. Pfeiffer's talk a film was shown through the courtesy of the Porcelain Enamel and Manufacturing Co. of Baltimore, Md. All steps in the manufacture, testing and application of porcelain enamels were shown in great detail.

The main event of the evening was a talk by Joseph Winlock, metallurgist of the Edward G. Budd Manufacturing Co., on "Stamping, Drawing and Forming."

Mr. Winlock stated that basic open hearth steel containing less than .14% carbon is generally used in deep drawing. Hot rolled sheet may be used where a good suface on the finished part is unnecessary, but where a smooth surface is desirable, cold rolled sheet is used.

Steel used for drawing has a comparatively low yield point and tensile strength. The use of high strength material would greatly increase the wear on the dies. In the drawing operation, the piece is first strained elastically until the yield point is reached. Plastic flow then begins and the part takes the form of the die. The part must be deformed to a slightly greater extent than is desired in the finished stamping as a partial recovery or "spring back" takes place when the pressure is released. The tensile strength of the steel must not be exceeded at any point or failure will occur.

Mr. Winlock ably discussed the effect of heat treatment and cold working on the drawing properties of sheet steel and the causes and remedies for some of the difficulties encountered in the stamping of steel.

A film was shown illustrating the various operations in making Budd all-steel bodies.

The meeting was voted a great success by a large number of members and guests present.

64-PAGE ALCOA BOOK AVAILABLE

"Alcoa Aluminum and its Alloys" is a 64-page book giving concise information on the physical and chemical properties of the aluminum alloys manufactured by Aluminum Co. of America. Copies may be secured from the company's offices in Pittsburgh.

RYERSON ALTERS ST. LOUIS SET-UP

Joseph T. Ryerson & Son, Inc., have announced that the management of their St. Louis plant has been taken over by Harold B. Ressler, vice-president at Chicago. Mr. Ressler will be in direct contact with the St. Louis organization. R. B. Wilson, manager of sales of the St. Louis plant, will be the senior resident executive.

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MUNCIE HAS FIRST MEETING

By E. M. Kingsley

The first regular meeting of the Muncie group was held on Feb. 3. Over 115 were in the audience to hear W. E. Sanders, plant and metallurgical engineer for Muncie Products Division of General Motors Corp.

Mr. Sanders delivered the first half of a paper on the "Effect of Greater Density in Steels Upon Machinability." The second section of this paper was the feature of the March 2 meeting.

SYRACUSE MEN HEAR D'ARCAMBAL FEB. 9

A.S.S.T. President Discusses Factors in Machinability

By James M. Hutton

A. H. d'Arcambal, metallurgist of Pratt & Whitney Co. and president of the A. S. S. T., gave a talk on "Machinability of Metals," Feb. 9, at the Syracuse chapter meeting. He stated that production is dependent on the machinability of metals, and showed, by means of lantern slides, the great improvements made in the last twenty years on machine tools. Because of the advent of high speed and tungsten carbide cutting tools, machine tools are being made larger than ever before. Cutting tools he chose to call the "indispensable tools of industry," referring, of course, to cutters, taps, reamers, etc., and care, he said, should be used in the selection of same. Design of these tools depends on the material to be fabricated.

Various S. A. E. steels were mentioned for certain specific purposes and it was pointed out that it was sometimes economy to use a more expensive steel because of the ease of machining and, of course, the resultant better product. Steel with a Brinell hardness of 300 or over will machine much better with the addition of 0.2% to 0.3% molybdenum.

Of paramount importance in the machining of metals are the cutting fluids. For the majority of tapping, reaming and milling jobs a mixture of one part sulphurized lard oil and seven parts machine oil proves satisfactory. When chrome vanadium steel, with a Brinell of 300 and over, has to be machined, the addition of kerosene to the above mixture proves beneficial. Strange as it may seem, difficulty in machining die castings was overcome by using a 40 Baumé fuel oil. Paraffin was recommended for machining brass.

Chrome plating of tools has proven beneficial in many cases, particularly in the reaming of die castings.

A rousing vote of thanks brought this meeting to a close.

OFFERS NEW ALUMINUM ELECTRODE

Lincoln Electric Co., Cleveland, announces a new electrode, "Aluminweld," for welding aluminum. It is a 5% silicon-aluminum alloy for welding sheet or cast aluminum. It is designed for either metallic or carbon arc welding. A coating helps prevent excessive oxidation and will dissolve any aluminum oxide that might be formed.

D'ARCAMBAL SPEAKS TO NEW YORK'S MEN

Gives Talk on Tools and Tool Steels at February Meeting

By T. N. Holden

Pertinent facts regarding certain tools and tool steels, as seen by an experienced practical observer, were presented before the February meeting of the New York chapter by A. H. D'Arcambal, president of the National Society and consulting metallurgist of the Pratt & Whitney Co., Hartford.

There has been very little change in the composition of standard highspeed steels in the last 25 years, or since about 1% vanadium was added to regular tungsten highspeed steel. The use of about 8-10% cobalt with about 1.75% vanadium has been developed. Such steels Mr. D'Arcambal regarded as excellent for rough turning and planing. This steel for highspeed taps he did not recommend as equal to regular highspeed steels. The two objections to cobalt are that this metal lessens the toughness and tends to produce a soft skin.

As to molybdenum highspeed steel, containing 8 to 9% molybdenum, this has only about 75% of the cutting efficiency of highspeed tungsten steel and is hard to forge.

Discussing the tungsten carbide type of cutting tools, the speaker said that the regular tungsten carbide tool was generally acknowledged and demonstrated as not suited to cutting steel. In his opinion, stellite is even better than tungsten carbide for cutting cast iron. The main objection to tantalum carbide for cutting steel is its brittleness. The combination of tungsten and tantalum carbides, about 30% of the latter as a binder with cobalt, has thus far proved more successful.

The present heat treatment for hardening highspeed steels, according to the practice developed at the speaker's plant, is as follows: Pre-heat to 1500 or 1600 degrees F. but do not soak at this heat. Then heat to 2340-2350° in the high temperature furnace, followed by quenching in oil. Drawing is done at 1050-1150° with a soaking of about 2 hr. Mr. D'Arcambal emphasized the fact that in this heat treatment cycle the temperature governs the cutting efficiency regardless of the quenching or draining methods used.

There was some discussion of the chromium plating of certain small tools. Mr. D'Arcambal spoke very highly of this new development. His testimony is that in the case of chromium plated reamers, their life on certain aluminum alloy jobs had been increased from a three-day life to one of three weeks.

A folder listing the characteristics of Ontario air hardening die steel is available from the Ludlum Steel Co., Watervliet, N. Y.

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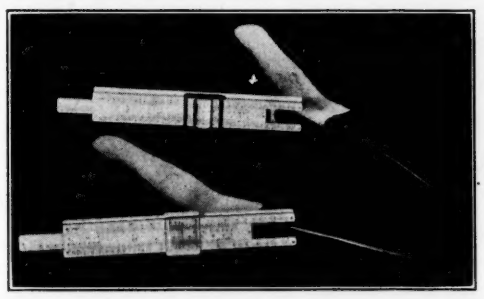

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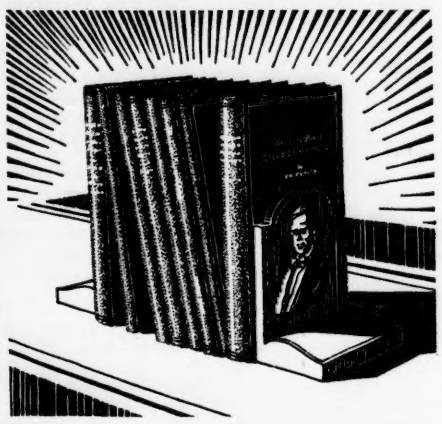

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Principles of Heat Treatment of Steel by the **Metallurgical Staff, Bureau of Standards**
Presents the basic reasons for the behavior of steels when heated, cooled or quenched. It contains a comprehensive bibliography, a great aid in studying specific problems.

Heat Treatment, Uses and Properties of Steel by **H. B. Knowlton**
Assistant Chief Metallurgist of International Harvester Co. covers the various plain carbon and alloy steels, their selection and properties obtainable by various treatments. The author goes at length into the peculiarities of each steel, methods and equipment for handling, carburizing, heat treating and cleaning.

The Constitution of Steel and Cast Iron by **Frank T. Sisco**
Editor, Alloys of Iron Research, explains in his clear, understandable manner the metallurgical functions of carbon and the common alloying elements, the effects of heat treating and variations in alloy content to secure internal structures that give desired physical properties. Cold working, carburizing and treating of worked and carburized steels are presented at length.

The Quenching of Steels by **H. J. French**
In charge of steel development, The International Nickel Co., clarifies this subject. Cooling mediums are classified. The effect of size and shape of work in process and sources of variation in hardening are presented in detail. Gives a simple means of selecting proper cooling solutions; also tables for determining internal and surface condition of steels after quenching.

Nitriding Symposium, papers presented by several authorities at the Convention of the A.S.S.T., reviews the possibilities of this process, selection of nitriding steels and proper application of the process.

Inclusions in Iron by **Dr. C. R. Wohrman**
Is a careful study of the common inclusions, their nature and effect.

The Application of Science to Industry by **Dr. W. H. Hatfield**
Director, Brown-Firth Research Laboratories, England, is an interesting review of British steel making and rolling practice. He discusses many of the common steels. Chapters on steel at elevated temperatures and tool and cutlery steels contain much valuable data.

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NEW HAVEN HOLDS SPIRITED MEETING

Bowling Match with Hartford Team Precedes Session

By R. T. Porter

As someone remarked after witnessing the recent bowling match between New Haven and Hartford chapters, it is very fortunate that Hartford has double the number of members as New Haven because they will need to search for more recruits if they expect to win the next match, to be rolled in Hartford. Although they were defeated in two out of the three matches they had the honor of having Louis Knapp of the Hartford Electric Light Co. gain the sigh single with a score of 135.

Hartford was represented by Hare, Wills, Knapp, D'Arcambal and Nemser; New Haven by Doolan, Hawkins, Porter, Fish and Baldwin. The fine spirit, with everyone enjoying it, continued throughout the dinner and the evening session.

Following the dinner at the Y.W.C.A., F. G. Space, manager of purchases, Seymour Mfg. Co., gave a very inspiring talk on the relationship between the purchasing agent and the engineer.

W. H. Wills, metallurgist of the Ludlum Steel Co., presented a thorough paper on "The Role of the Laboratory in the Tool Steel Industry." Mr. Wills stated that the laboratory has become a factor of increasing importance in the steel industry at large and particularly in the tool steel division due to the diversity of the products, and to the high standards of quality that now prevail. The work of the laboratory may be divided under three heads or divisions, namely, first, routine control and inspection work on material in process or finished products; second, the investigation of complaints and tool failures or other customers' problems involving the products; third, research work.

Mr. Wills' paper was followed by a number of very excellent slides showing the structures desirable for various grades of steels after the proper heat treatments. As usual the discussion which followed was very spirited and beneficial to all. Major A. E. Bellis presided as the technical chairman.

The March meeting will be held in Bridgeport and addressed by Mr. E. W. Page, manager of the industrial sales department, General Electric X-Ray Corp.

DR. GILLETT GETS FOUNDRY MEDAL

Dr. Horace W. Gillett has been selected for the W. H. McFadden Medal of the American Foundrymen's Association which will be awarded at the 1932 convention. Dr. Gillett is director of Battelle Memorial Institute, Columbus.

G. S. PETERSON IN NEW WORK

G. S. Peterson, identified with the furnace department of Strong Carlisle & Hammond Co. for 12 years, is engaged now in industrial furnace engineering and contracting with offices at 1836 Euclid Ave., Cleveland, Ohio.

H. N. EWERTZ IN NEW POSITION

Harold N. Ewertz, a member of the Boston chapter, on Jan. 1 took complete charge of the welding department of Austin-Hastings Co., Inc., Cambridge, Mass.

H. O. Swoboda, Inc., 3400 Forbes St., Oakland Station, Pittsburgh, has published bulletin 220 illustrating the Falcon straight line continuous electric furnaces for hardening and tempering strip steel.

DETROIT'S FORGING TALK

(Continued from Page One)

die for hot pressing contains 0.35% of carbon, 14% tungsten, 3% chromium, and 1% vanadium.

Heating furnaces may be batch type or continuous, the latter probably giving better control. Furnaces with automatic temperature control should have about 40% increased capacity since the maximum temperature is reduced. Up to 3-inch sizes the steel should be heated about five minutes per inch and a little slower for larger sizes, and also slower if above 0.50% carbon.

Alloy steels may be preheated. Overheating, burning, carburized spots from coke formation, pitting from slag, etc., should be avoided. Forging quality steel should be used. Forgings should be pickled and inspected for defects. Defects may be in the steel as seams or from forging, such as laps caused by folding while in the dies or cold shuts by surfaces meeting in the dies.

The maximum forging temperature should be about 200° below the solidus line.

Slides were presented showing equipment, stages of forging, dies, structures, and failures.

NOTRE DAME MEN HEAR KORP

By V. N. Uhlmeyer

The Notre Dame group held their monthly meeting on Feb. 16 in the auditorium of the new Hall of Engineering at the University.

The speaker on the program was Jordan Korp, metallurgical engineer for Leeds & Northrup Co., who chose for his subject "Tool Room Furnaces for Carbon Steels." He discussed the modern ideas of tool room treatment, stressing the hump furnace. He also related some of his experiences in the various plants in Europe, which he visited last year.

D'ARCAMBAL VISITS ROCKFORD CHAPTER

Talk on Tools and Plating Arouses Lively Discussion

By L. J. Strohmeyer

At the January meeting of the Rockford chapter, the chapter was fortunate in having with them as the main speaker of the evening, A. H. d'Arcambal, the president of the National Society, and W. H. Eisenman, the national secretary.

After the regular meeting Mr. Eisenman gave a short talk in regard to the work of the society and expressed the appreciation of the National Society for the work being done by the various chapters and the financial help given by its sustaining members.

The speaker of the evening, A. H. d'Arcambal, was then introduced. Because of the wide scope of his talk he was forced to be rather brief in covering some of his points.

He first mentioned the methods used in making tool steels and gave figures on the percentage which good practice allows. He states that in the making of the better tool steels now on the market the percentage of scrap used was between 35 and 40.

In speaking of tungsten carbide, he mentioned that when this first came out it was heralded as a "cure all". Naturally, this killed it in its infancy due to the great number of failures. It was not, of course, suited for machining steel, its application being the machining of compositions such as bakelite, also non-ferrous metals and cast iron.

He also gave some interesting figures on tantalum carbide. In some cases this was giving ten times the life of high cobalt steel. Also the fact that it is possible to operate at higher speeds and hold to size longer under this extreme heat condition.

In discussing processes he mentioned nitriding and chrome plating. He emphasized the fact that in the nitriding process much progress has been made, and where formerly 90 hours was required to obtain a case of .0030" this is now being done in 40 hours.

INDIANAPOLIS MEN STUDY CAST IRON

Oliver Smalley Describes the Properties of "Meehanite"

By A. E. Focke

At the regular meeting of the Indianapolis chapter, held Feb. 8, in the Severin Inn, the members and guests were treated to a feast of fundamental metallurgy.

Oliver Smalley, general manager of the Meehanite Corp., Pittsburgh, Pa., talked on "Production and Properties of Meehanite Cast Iron." His talk was well prepared and profusely illustrated with lantern slides. Mr. Smalley developed the basic metallurgy of grey cast irons and then showed that material made by the Meehanite process overcame many of the limitations of ordinary grey cast irons.

He showed that the Meehanite method permitted control of the graphite precipitation through a gaseous reaction set-up by the addition of calcium silicide to the molten metal as it came through the spout of the cupola.

He particularly stressed the fact that with superior cast irons it was possible for the designing engineer to work up his design on the basis of accurate engineering data because these irons had definite moduli of elasticity and definite yield points. He further showed that with Meehanite one could design a section to engineering data since the strength was proportioned regardless of the size of section. This result is due to the enormously greater "solidity penetrating power" of the superior cast irons which provides sound material throughout the section.

HEAT TREATING BY GAS SYRACUSE TALK

E. D. Milener Discusses Topic Before Chapter on Jan. 26

By James M. Hutton

"What can be expected from recent research in applying gas energy to heat treating processes."

The above is the title of a paper read before the Syracuse chapter of the A.S.S.T. on Jan. 26 by E. D. Milener of the American Gas Association.

The advent of natural gas in the near future to Syracuse made the subject particularly interesting. The speaker introduced his subject by remarking it was difficult for him to agree with the contention that it was the increase in mechanical contrivances that contributed largely to the present depression. As a matter of fact, he stated, history shows that the standard of living has been raised; that greater joys and a higher plane of living are the direct outcome of the application of mechanics along sensible lines.

Mr. Milener, continuing, said that intense research was being carried on by the American Gas Association and that diffusion flame combustion is one of the outstanding contributions in the combustion development. Diffusion flame combustion has two characteristics, both of which can be of tremendous value in the advance of utilizing gas fuel. The first is an increased flame radiation which gives us improved methods of heat transfer, and the second is a control of the furnace atmosphere by means of the free carbon reaction on metal surfaces. Certain types of installation are benefited solely by an increased radiation, such for example as on sheet and pair furnaces, normalizing furnaces, car bottom annealing furnaces. In these types of installation the main advantage lies in the control of the surface metal, both as regards the type of scale formed and as a control on decarbonization.

There are a few types of installation which require both the increased rate of heat transfer and the effect of the free carbon on the metal surface, the chief one of which is forging.

In answer to the question "Isn't it true that a luminous type of combustion heats faster than a non-luminous?" the answer was in the negative. The fastest type of commercial heating which we have is the non-luminous type of combustion. This application using natural gas was applied recently to the smelting of copper in reverberatory furnaces. Diffusion combustion makes it possible to heat polished steel as high as 2400° in a furnace and bring it out bright without any scale whatsoever. This is because the work can be covered by an inert gas blanket which absolutely prevents any oxidation. A number of questions met with ready and adequate replies by Mr. Milener.

This brought the meeting to a close.

CLEVELAND LIKES TWO WICKENDEN'S

Head of Case and Nickel Co. Executive on Same Program

By H. B. Pulsifer

The February meeting of the Cleveland chapter was held on the first evening of the month at Hotel Olmstead. This had been advertised as an "All-Wickenden" meeting and fully justified all expectations.

Dr. W. E. Wickenden, president of Case School, had been procured for the coffee talk and his brother T. H. Wickenden, of International Nickel Co., gave the address of the evening.

Chairman Benninghoff, immediately after the dinner, turned the meeting over to National Secretary W. H. Eisenman as honorary chairman and guest of the evening. The good humor started at once and was not interrupted during the course of Dr. Wickenden's witty remarks to the sixty odd members at the tables.

After this preliminary a hundred more members and guests joined to hear T. H. Wickenden tell about the numerous applications of nickel in industry. Mr. Wickenden is assistant manager of development and research for his company and naturally gave a very competent and authoritative discourse.

This was illustrated and amplified by numerous slides showing materials, charts and tables relating to the applications and the properties of the alloys. The use of nickel in thermostatic alloys, steel and cast iron was explained in some detail and its beneficial effect made clear. Some interesting specimens showing physical and magnetic effects were made to do their stunts before the audience.